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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,004	03/11/2004	Benjamin Herzhaft	612.435-40X00	3890
20457 7590 09/25/2009 ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-3873				
EXAMINER				
AKRAM, IMRAN				
ART UNIT		PAPER NUMBER		
1795				
NOTIFICATION DATE		DELIVERY MODE		
09/25/2009		ELECTRONIC		

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* BENJAMIN HERZHAFT, MARCEL ROPARS,  
THIERRY HUARD, and LAURENT NEAU

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Appeal 2009-006301  
Application 10/797,004  
Technology Center 1700

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Decided: September 23, 2009

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Before BEVERLY A. FRANKLIN, LINDA M. GAUDETTE, and  
KAREN M. HASTINGS, *Administrative Patent Judges*.

HASTINGS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 1-12, which are the only claims pending in this application. An oral hearing was held on September 9, 2009. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

I. BACKGROUND

The invention relates to a method of forming a structural assembly.  
Representative claim 1 and 7 read as follows:

1. Method for estimating the quantity of CO<sub>2</sub> present in a geologic formation comprising the following steps:

- said formation is penetrated by a well drilled from the surface,
- said formation is contacted with a drilling fluid having a pH greater than 8 that travels from the formation to the surface,
- a given quantity of return fluid is sampled at the surface and transferred to a cell,
- the pH of said quantity of fluid is measured,
- a given quantity of product acidifying said fluid is added to adjust the pH to a value of less than 4,
- the CO<sub>2</sub> level of the gas in the cell is measured after the acidification step,
- the quantity of CO<sub>2</sub> contained in the geologic formation is calculated from the CO<sub>2</sub> measurement.

7. Device for estimating the quantity of CO<sub>2</sub> present in a geologic formation traversed by a well in which a drilling fluid with a pH greater than 8 travels between said formation and the wellhead at the surface, characterized in that it comprises means for sampling a given quantity of fluid at the wellhead, a cell to hold said quantity of fluid, means for measuring the pH in said cell, means for inert-gas scavenging of the internal space of the cell, means for injecting an acidifying product into said cell, and means for measuring the quantity of CO<sub>2</sub> contained in the internal space of the cell.

The Examiner relies upon the following prior art as evidence of unpatentability:

Kelley	4,299,794	Nov. 10, 1981
Allison	4,397,957	Aug. 9, 1983
Jones	4,904,603	Feb. 27, 1990
Fehder	4,994,117	Feb. 19, 1991

Claims 1-3 and 6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Jones in view of Kelley. Claim 4 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Jones, Kelley, and Allison. Claim 5 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Jones, Kelley, and Fehder. Claims 7-12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Jones, Kelley, and Allison.

### ISSUE

Have Appellants shown that the Examiner reversibly erred in her determination that an artisan would have been motivated to measure the CO<sub>2</sub> content of the drilling mud of Jones based on the teachings of Kelley?

We answer this question in the affirmative.

### OPINION

The Examiner bears the initial burden of presenting a *prima facie* case of obviousness. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). “[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) *quoted with approval in KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

While the Supreme Court of the United States has recently rejected a formalistic and rigid application of the teaching, suggestion, or motivation test as an exclusive test in the obviousness inquiry, it nevertheless made clear that an invention “composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” (*id.*). The Supreme Court elucidated on this matter by stating that “it can be important to identify a reason that would have

prompted a person of ordinary skill in the relevant field to combine [the] elements in the way the claimed new invention does.” *Id.*

The fact finder must be aware “of the distortion caused by hindsight bias and must be cautious of arguments reliant upon ex post reasoning.” *KSR*, 550 U.S. at 421 (citing *Graham v. John Deere Co.*, 383 U.S. 1, 36 (1966) (warning against a “temptation to read into the prior art the teachings of the invention in issue”)).

Applying the preceding legal principles with respect to obviousness to the factual findings in this record, we determine that the Examiner has not properly identified factual findings and reasoning for establishing a prima facie case of obviousness based on Jones in view of Kelley with respect to independent claim 1, nor based on Jones in view of Kelley and Allison with respect to independent claim 7.

For each of independent claims 1 and 7, the Examiner concludes that

[i]t would have been obvious to one having ordinary skill in the art ... to sample the CO<sub>2</sub> quantity in the fluid of Jones via the acidification step of Kelley since the annular gas pressure and contents are very important to drilling procedures and well known in the art to be. The invention of Kelley is one such method for detecting CO<sub>2</sub> and is applicable to industrial process (column 2, lines 20-23).

(Ans. 3, 6).

The deficiency of each of the Examiner’s obviousness conclusions is that the Examiner has not clearly articulated any specific reason why an artisan would seek to sample the CO<sub>2</sub> in the drilling fluid of Jones. The Examiner stated

that CO<sub>2</sub> is a commonly occurring, underground gas which has the potential to be very disruptive to the drilling

process-as one skilled in the art knows well, this is a primary motivation to use drilling fluids at all (Jones teaches this).

(Ans. 8).

However, the Examiner has not directed us to any specific teaching in Jones to support her assertion. To the contrary, the first mention of CO<sub>2</sub> in Jones is “[i]n general, the mud system must be regarded as an open system with regard to carbon dioxide” (Jones, col. 15, ll. 36-38) and the assumption is made that the “mud system is in equilibrium with the carbon dioxide in the air” (Jones, col. 15, ll. 53-55).

The Examiner did not rely on any appropriate evidence demonstrating that a person of ordinary skill in the art would have reasonably expected that a CO<sub>2</sub> sampling step of the drilling fluid to calculate or estimate the CO<sub>2</sub> contained in the geological formation is desirable for Jones’ purpose, which is to analyze the aqueous mud filtrate by ion chromatography for selected negative and positive ions, and measure one or more other parameters of the mud (e.g., pH, temperature) to use for appropriate adjustment of the composition of the mud supply (*see, e.g.*, Jones abstract; *also, e.g.*, App. Br. 6).

The fact that CO<sub>2</sub> sampling/analyzing techniques are known, per se, for “industrial fluids” (as demonstrated by Kelly) does not demonstrate that a person having skill in the art would have reasonably expected to use a CO<sub>2</sub> sampling/analyzing step in Jones.

The Examiner further stated that Appellants’ Specification establishes “CO<sub>2</sub> measurement in geological formations to be known motivation to determine methods in sampling in situ (see paragraphs 1 and 2 of page 2).” (Ans. 8). Appellants, on the other hand, state “Appellants’ specification is

not prior art. Neither is there any admission in Appellants' specification of the allegation [made] by the Examiner in the Examiner's Answer" (Reply Br. 3).

Appellants' Specification states "At the present time, *the steps taken after the fact on reservoir rock* taken from the well do not offer sufficient safety, and another technique providing the desired information quickly during drilling appears to be essential." (Spec. 2, last sentence of paragraph 2; emphasis added). We fail to see how this establishes a reason for the artisan to measure the CO<sub>2</sub> content of the drilling mud in Jones. We agree with Appellants that neither Jones nor Kelley has as an objective determining CO<sub>2</sub> in a geological formation (App. Br. 5-7, 10; Reply Br. 4). The Examiner has not adequately explained why one of ordinary skill in the art would have reasonably expected to use CO<sub>2</sub> sampling for Jones's purpose.

Under the circumstances recounted above, it is apparent that the only teaching or suggestion for combining the applied references in such a manner as to achieve the here claimed invention derives from the Appellants' own Specification rather than the applied prior art. Therefore we conclude that the Examiner's rejection is improperly based upon improper hindsight reasoning. *See W.L. Gore & Assocs. v. Garlock, Inc.*, 721 F.2d 1551, 1553 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984) ("To imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.").

The Examiner relied on Allison and Fehder to respectively address the obviousness of the inert gas scavenging recited in dependent claim 4 (as well as independent claim 7) and the claimed CO<sub>2</sub> measurement of the initial fluid in claim 5. The Examiner did not rely upon these references to teach or suggest the obviousness of measuring CO<sub>2</sub> in the drilling fluid of Jones as claimed. Thus, the addition of these references does not address the deficiency between the claimed invention and the invention of Jones and Kelley as discussed above. Therefore, we must also reverse the Examiner's rejections that rely either upon the combination of Jones, Kelley, and Allison or the combination of Jones, Kelley, and Fehder.

For these reasons and those set out in the Appeal Brief, we reverse all of the Examiner's § 103 rejections before us on appeal.

#### CONCLUSION

Appellants have shown that the Examiner reversibly erred in her determination that an artisan would have been motivated to measure the CO<sub>2</sub> content of the drilling mud of Jones based on the teachings of Kelley.

In summary, all of the rejections before us on appeal are reversed.

#### REVERSED

PL Initial:  
sld

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